

ing housing or machine case, *even when rolling element bearings are used.*

When your primary interest is with vibration occurring in the rolling element bearing or at the rotor, this vibration originates *inside* the machine. Therefore, both the amplitude and phase of the various frequency components that constitute the complex vibration signal must be preserved as they travel through the machine structure to its casing. This vibration is modified in several ways: the amplitude is attenuated as a function of frequency and other physical variables, the phase of the frequency components are shifted depending on the amount of damping in the transmission path, and the modal response of the case may amplify or attenuate the vibration measured by the transducer. Decisions, based on this potentially distorted data, may be incorrect. Transducer placement becomes extremely important, since the transducer is only able to measure the response at a single location on the casing. In addition, the casing vibration may contain signal content of significant amplitudes that is neither bearing- nor rotor-related, such as blade or impeller passing frequencies, piping vibration, or flow turbulence, etc. This can make it extremely difficult to separate bearing- and rotor-related signal content from other signal content.

When bearing- and rotor-related information is your primary goal, our REBAM® technology represents a better choice (see the case history on page 7 for an example of this and the sidebar on page 9 for a description of REBAM), as it overcomes all of these difficulties. When considering the use of a seismic transducer, identify not only if a significant portion of the shaft and bearing vibration will be faithfully transmitted to the machine casing at the measurement location, but also determine what you are really interested in: bearing-related activity? Rotor-related activity? Casing vibration not originating with the rotor or bearing? The answers to these questions will help determine the correct transducer for the job at hand.

Finally, special care must be exercised for applications where the transducer will be used as part of a machinery protection system that provides machinery shutdown capability. Seismic transducers, when misapplied, can miss or mask important machinery data and result in missed trips or false trips. Why not ask for assistance in this important task of transducer selection? As always, Bently Nevada can provide the engineering applications expertise to help you select and install the correct transducer. ☺

ANNOUNCEMENTS



Don Bently to receive ASME award

The American Society of Mechanical Engineers (ASME) recently selected Donald E. Bently, founder, Chairman, and CEO of Bently Nevada Corporation, to receive the 1999 R. Tom Sawyer Award. He was chosen for his "advancements in developing primary instrumentation and diagnostic tools, which have resulted in the advancement of gas turbine engine development and its continued successful operation."

This significant award recognizes Mr. Bently's pioneering role in developing and advocating the use of shaft-observing proximity probes in many types of turbomachinery. Prior to the early 1960's, gas turbines were often monitored solely with casing vibration transducers. Today, thanks to his efforts, proximity probes are universally accepted as a superior method of monitoring virtually all machinery, not just gas turbines, for protection and machinery management.

Formal presentation of the award, which consists of a \$1000 honorarium, plaque, and certificate, will be made during the ASME TURBO EXPO '99, Exposition and Users Symposium. It will be held in Indianapolis, Indiana from 7 to 10 June 1999. If you attend the Expo, stop by our booth - #728. ☺

ASME Gas Turbine Users Symposium

Roger Harker, Bently Nevada's President and Chief Operating Officer, will be serving as Users Symposium Chairman of the ASME Gas Turbine Users Symposium (GTUS). The GTUS is part of the annual ASME TURBO EXPO '99, the main symposium for the international gas turbine community. It will be held in Indianapolis, Indiana, USA from 7 to 10 June 1999. We invite you to join the discussions and stop by our booth - #728. ☺



Solar Turbines/Bently Nevada Vibrations and Rotor Dynamics Lab

Bently Nevada and Solar Turbines recently teamed up to renovate and re-equip the Mechanical Engineering Department's lab. Students at California Polytechnic State University (Cal Poly) have been eagerly using this new lab since it opened in January 1998. According to Safwat Moustafa, Mechanical Engineering Chairman, "The new equipment allows us to teach our students how to solve turbomachinery design problems related to rotor vibrations. In fact, we've created a new elective, "Rotor Dynamics and Machinery Malfunctions."

The lab is equipped with four complete machinery diagnostic workstations provided by Bently Nevada, each with an RK4



Rotor Kit, a 208 Data Acquisition Interface Unit, a computer with ADRE® for Windows and Data Manager® 2000 Display Software, two oscilloscopes, and a printer. This enables students to complete labs where they solve vibration and rotor dynamics problems.

Solar Turbines also made a generous contribution that was used to fund senior projects and to purchase equipment.

Mechanical Engineering professor Jim Meagher notes, "My students are very excited about working in a state-of-the-art facility. Last

quarter, a student told me that the vibration lab course made him remember what he liked about engineering - he is re-energized about continuing his degree." ☺

Year 2000 and Bently Nevada products

Bently Nevada has worked diligently to assure that none of our machinery protection systems (even those with embedded firmware) are adversely affected by the Year 2000 rollover. All information regarding Bently Nevada Corporation's Year 2000 readiness is provided to assist our customers. It is updated regularly and is, therefore, subject to change. Please check periodically for any changes to this Year 2000 readiness information by visiting Bently Nevada Corporation's website – www.bently.com.

If you do not have access to our website, please contact your nearest Bently Nevada professional.

Any past or present information regarding Bently Nevada Corporation's Year 2000 readiness, and which is provided on its website, in the Orbit magazine, and in its Year 2000 letter, are Year 2000 statements, as defined by the Year 2000 Information and Readiness Disclosure Act, (112 Stat. 2386), and are hereby designated Year 2000 Readiness Disclosures.

Bently Nevada Corporation disclaims all warranties that may be expressed or implied from this information, and, in no event, shall Bently Nevada Corporation be liable for any damages whatsoever. ☺

Bently Nevada wins Control Magazine's Readers' Choice Award for fifth year

For the past few years, Control Magazine has surveyed its readers, asking them to identify the manufacturers that have provided them with the best instrumentation and control products. No company names are provided; the survey



recipient must write in the name of a company. For the fifth year in a row, Bently Nevada placed #1 in the Vibration Instrumentation category. We received 77% of the votes for this category.

Thanks to all of you who voted for us, affirming our motto — "Helping you Protect and Manage all your Machinery®." We appreciate the confidence you have shown in our products and we'll continue working hard to retain that trust. ☺